From: Garver, Kyle [Kyle.Garver@dfo-mpo.gc.ca]
Sent: 2009-Oct-08 9:47 PM
To: Miller-Saunders, Kristi
Subject: RE: Ministers memo--DRAFT
Attachments: Ministers memo_Oct 8 2009 KG comments.rtf

Hi Kristi,
Thanks for the clarification on what the briefing note will be utilized for. I fully agree that the genomic profiles do permit cause for concern and warrant further study however equating the presence of brain tumors with mortality and salmonid declines is tenuous at this time.

I've attached the briefing note with my suggestions/comments. My main concern is if the brain anomalies are indeed tumors then one may argue that the declines in tumor incidence in returning adults might simply be due to regression of the tumor (as observed with WDSV) rather then fish dying and dropping out of the population.

Cheers,
Kyle

-----Original Message-----
From: Miller-Saunders, Kristi
Sent: October 8, 2009 12:55 PM
To: Garver, Kyle
Subject: RE: Ministers memo--DRAFT

Stewart will provide input into this document before it is released. However, I would like to get your comments and suggestions before then.

I will agree that the title might be a bit strong. What about the title "A novel, cancer-causing viral disease may be associated with wild salmon mortality in BC"? Or I could replace cancer-causing with tumourogenic or some such term.

In my view, even if what we are observing is not PL/SLV, the genomic data derived from multiple (but not all) tissues alone point to a viral disease, they also show an association of the viral signature with tumour activity in the brain, and they suggest that salmon are expending a great deal of energy towards fighting this disease.

We also have evidence that fish that contain this viral signature in the gill suffer higher levels of mortality in the river than those that don't. We have data showing declines in tumour incidence in the first three months at sea, and as salmon migrate to their spawning grounds as adults. These data indicate, but do not yet prove, that there may be tumour associated mortality in the ocean.

The prevalence levels both from the genomic signatures and tumour data suggest a wide-scale effect that is at sufficient levels to consider as a potential threat to wild salmon populations in southern BC. If this were merely an endemic virus, we should not see the level of responses that we see. The genomic responses are an order of magnitude stronger than we observed in the IHN challenge studies. Moreover, in the IHN work, the species that were less susceptible to disease from the IHN virus responded much more weakly to the virus than those that were susceptible, suggesting that one only responds strongly when

damage is being done (as would be expected under Polly Matzinger's danger model of immunological responses). These are the data of import to this document.

At the sockeye meeting, Stewart suggested that genomic signatures are not highly specific, and you could not tell from genomics data the difference between a viral, bacterial or toxic response, indicating that genomic signatures only told you that the fish were stressed. He is dead wrong about that. The power of the genomic signatures is their high specificity, and the signatures we are seeing are highly consistent among fish, life-history stages and years. We are dealing with the same phenomenon in multiple tissues and over multiple years, of that there is no doubt.

If the "tumours" are really some sort of abnormal tissue growth of another kind, they are still profoundly affecting the physiology of the brain,. We have seen no other physiological signal in any tissue or experiment that is stronger than that in the brains with these growths. While we are still validating the tumour-associated genomic signatures, I don't have a lot of doubts about it, as the incidence levels from the profiles and from brain dissections are highly congruent, and the signature indicates a strong stimulation in the area of the brain we are finding the "tumours".

This document is being prepared to inform upper management of these observations and their possible link to fluctuating returns of salmon. It is not a done deal, only a possibility that is sufficiently strong and novel to warrant further consideration and study. They may chose to take this information under advisement and do nothing further. Or they may chose to fund more research so that we can better understand the implications of these new data.

I would appreciate your input on the rest of the document if you have the time.
Thanks,

Kristi Miller
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Please Note new email address effective Jan 2008:
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From: Garver, Kyle
Sent: October 8, 2009 10:53 AM
To: Miller-Saunders, Kristi
Subject: RE: Ministers memo--DRAFT

Hi Kristi,
Although the document is clear and concise I'm a bit concerned that the briefing note gives the impression that it is known that a retrovirus is responsible for the decline of salmonids in the Strait of Georgia. If the sound bite "Cancer-causing viral disease responsible for salmonid declines" gets out to the media then it will be extremely hard to retract such a statement if in fact future studies do not support this conclusion.

I noticed that Stewart is back in the office, it might be beneficial to have his involvement since he was a participant of the initial meeting.

Regards,
Kyle
-----Original Message-----

From: Miller-Saunders, Kristi
Sent: October 7, 2009 2:23 PM
To: Garver, Kyle
Subject: Ministers memo--DRAFT

Please comment.

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